IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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Inventor..... D. Amnon Silverstein et al.
Assignee..... Hewlett-Packard Development Company, L.P.
Group Art Unit 2622
Examiner..... Christopher K. Peterson
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Title. ..... Image Sensing Device and Method

CORRECTED BRIEF OF APPELLANT

To: Mail Stop Appeal Brief-Patents
Commissioner of Patents
P.O. Box 1450
Alexandria VA 22313-1450

From: James D. Shaurette (Tel. 509-624-4276; Fax 509-838-3424)
Wells, St. John, P.S.
601 W. First Avenue, Suite 1300
Spokane, WA 99201-3817

Appellant appeals from the Office Action mailed October 29, 2008 (hereinafter "Office Action" or "Action"). The Commissioner is authorized to charge the fee required under 37 C.F.R. § 41.20(b)(2) to Deposit Account No. 08-2025.

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I. REAL PARTY IN INTEREST

The real party in interest of this application is Hewlett-Packard Development Company, L.P. as evidenced by the full assignment of the pending application to Hewlett-Packard Development Company, L.P. recorded starting at Reel 014890, Frame 0168, in the Assignment Branch of the Patent and Trademark Office. The Hewlett-Packard Development Company, L.P., is a limited partnership established under the laws of the State of Texas and having a principal place of business at 20555 S.H. 249 Houston, TX 77070, U.S.A. (hereinafter "HPDC"). HPDC is a Texas limited partnership and is a wholly-owned affiliate of Hewlett-Packard Company, a Delaware Corporation, headquartered in Palo Alto, CA. The general or managing partner of HPDC is HPQ Holdings, LLC.

II. RELATED APPEALS AND INTERFERENCES

Appellant, Appellant's undersigned legal representative, and the assignee of the pending application are aware of no appeals or interferences which will directly affect, be directly affected by, or have a bearing on the Board's decision in the pending appeal.

III. STATUS OF THE CLAIMS

Claims 1-32 are pending and stand rejected. Claims 1-3, 12-16, 25-29, and 31-32 are appealed.

IV. STATUS OF AMENDMENTS

No amendments have been filed after the Office Action mailed October 29, 2008.

V. SUMMARY OF CLAIMED SUBJECT MATTER

Concise explanations of the subject matter defined in each of the independent claims and argued dependent claims involved in the appeal follow with respect to exemplary illustrative embodiments of the specification and figures.

Referring to independent claim 1, a plurality of photosensors 106, 108, 110, 112 are described on page 6, line 1 of the specification and shown in Fig. 1 according to one embodiment. Filters 122, 124, 126, 128 are described at page 6,

line 10 and shown in Fig. 1 according to one embodiment. Interpolation of output signals of photosensors of two color sub-channels is described at page 14, line 23 and Fig. 6, step 670 according to one embodiment.

Referring to independent claim 12, projecting an image onto a sensor device comprising a plurality of photosensors is described on page 6, line 1 of the specification and shown in Fig. 1 according to one embodiment. Restricting the wavelengths of light is discussed with respect to filters 122, 124, 126, 128 at page 6, line 10 and shown in Fig. 1 according to one embodiment. Combining the outputs of the photosensors of two color sub-channels is described at page 14, line 23 and Fig. 6, step 670 according to one embodiment.

Referring to dependent claim 25, interpolation of the output signal of one of the photosensors of the two color sub-channels using only the output signal of another of the photosensors of the two color sub-channels is discussed at page 14, line 23 and Fig. 6, step 670 according to one embodiment.

Referring to dependent claim 26, interpolation prior to color correction is discussed at steps 670 and 672 of Fig. 6 and at page 14, line 23 according to one embodiment.

Referring to dependent claim 31, combining the output signal of one of the photosensors of the two color sub-channels with only the output signal of another of the photosensors of the two color sub-channels is discussed at page 14, line 23 and Fig. 6, step 670 according to one embodiment.

Referring to dependent claim 32, combining the output signal of one of the photosensors of the two color sub-channels with only the output signal of another of the photosensors of the two color sub-channels prior to color correction is discussed at steps 670 and 672 of Fig. 6 and at page 14, line 23 according to one embodiment.

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

A. The 102(a) rejection of claims 1-3, 25 and 27-28 over Mizukura.

B. The 102(a) rejection of claims 12-16, 29 and 31 over Mizukura.

C. The 102(a) rejection of claim 25 over Mizukura.

D. The 102(a) rejection of claim 31 over Mizukura.

E. The 103(a) rejection of claim 26 over Mizukura and Kakarala.

F. The 103(a) rejection of claim 32 over Mizukura and Kakarala.

VII. ARGUMENT

The claims stand rejected over Japanese Patent Application 2003-284084 to Mizukura ("JP Mizukura"). As set forth in the response of Appellants dated July 18, 2008, Applicants have uncovered a corresponding US application 2006/0012808 to Mizukura ("US Mizukura") in the family of the JP Mizukura reference. Appellants refer to both reference teachings below but note that numerous translation errors appear to be present in the JP Mizukura relied upon by the Office.

Appellants note that the Office Action presents minor objections to the specification for the first time. Appellants respectfully submit that the specification may be amended in a straightforward amendment to overcome such objections if allowable subject matter is found to be present in the application.

A. Positively-recited limitations of claims 1-3, 25 and 27-28 are not disclosed by Mizukura and the 102(a) rejection is in error.

Referring to the anticipation rejections, Applicant notes the requirements of MPEP §2131 (8th ed., rev. 7), which states that TO ANTICIPATE A CLAIM, THE REFERENCE MUST TEACH EVERY ELEMENT OF THE CLAIM. The *identical invention* must be shown in as complete detail in the prior art as is contained in the claim. *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989). *The elements of the prior art must be arranged as required by the claim. In re Bond*, 910 F.2d 831, 15 USPQ2d 1566 (Fed. Cir. 1990).

Independent claim 1 recites *circuitry coupled with the photosensors and configured to interpolate the output signal of one of the photosensors of one of the two color sub-channels using the output signal of another of the photosensors of another of the two color sub-channels*.

The Office at page 6 of the Office Action relies upon the teachings of paragraphs 59 and 65 and Figs. 12 and 13 of the JP Mizukura reference as allegedly teaching the above-recited limitations.

Paragraph 0059 of JP Mizukura (paragraph 0081 of US Mizukura) refers to a signal processing part 71 which is disclosed as performing "an interpolation process" *with **no details** regarding the interpolation performed*. However, Appellants respectfully submit that numerous types of interpolation may be performed. For example, interpolation may be used in image processing to perform demosaicing wherein two sensors of one color channel but at different spatial locations are interpolated to provide a value of the color channel at yet another spatial location. In consideration of the existence of different types of interpolation other than the specifically-claimed interpolation of claim 1 and the failure of Mizukura to provide any teachings regarding interpolating the G1 output using the G2 output (or vice versa), Appellants respectfully submit the generic interpolation teachings of paragraph 0059 of JP Mizukura may not be fairly interpreted to teach the specifically-claimed interpolation of claim 1.

In particular, the generic interpolation teachings of Mizukura fail to teach or suggest the specifically claimed circuitry configured to *interpolate the output signals of one of the photosensors of one of the two color sub-channels using the output signal of another of the photosensors of another of the two color sub-channels* as claimed.

Appellants respectfully submit that paragraph 0059 of JP Mizukura fails to teach or suggest the specifically recited interpolation limitations of claim 1 for at least the above-mentioned compelling reasons. Appellants respectfully submit that the generic interpolation teachings of Mizukura fail to show the identical invention in as complete detail as recited in the claim and the reliance upon such teachings in support of the anticipation rejection of claim 1 is in error in consideration of the above-recited authority.

Appellants respectfully submit that positively-recited limitations of claim 1 are not disclosed by the prior art and Appellants request reconsideration and withdrawal of the 102 rejection of claim 1.

Paragraph 0065 of JP Mizukura also relied upon by the Office as teaching the above-recited limitations corresponds to paragraph 0087 of US Mizukura.

These teachings merely disclose that the signal generation processing section 94 performs a generic interpolation process for interpolating color signals of 2x2 pixels of a *minimum unit*. As disclosed in Fig. 9 of Mizukura and discussed in paragraph 0063 of US Mizukura, a minimum unit includes a red pixel R, a green pixel of a first wavelength band G1, a green pixel of a second wavelength band G2, and a blue pixel B. Accordingly, paragraph 0087 teaches interpolating the R, G1, G2 and B color signals. ***These teachings are void of any disclosure or suggestion that the G1 output is interpolated using the G2 output or vice versa***.

Furthermore, the Office relies upon the teachings of the signal generating processing section 94 for performing the claimed interpolation. However, as clearly shown in Fig. 13, *signal generating processing section 94 outputs both the G1 and G2 signals*. Appellants respectfully submit it is non-sensical to interpret the generic interpolation of section 94 as interpolating the G1 output using the G2 output or vice versa when *section 94 is clearly disclosed as outputting both the G1 and G2 signals*. Furthermore, paragraph 0087 of US Mizukura recites that the output includes both G1 and G2 signals without teaching that G1 output is interpolated using the G2 signal or that the G2 output is interpolated using the G1 signal.

Appellants respectfully submit that Mizukura fails to disclose or suggest interpolating G1 output using the G2 output or interpolating the G2 output using the G1 output. Furthermore, such an interpretation is contrary to the explicit disclosure of Mizukura teaching signal generating processing section 94 outputting both G1 and G2 signals. Appellants respectfully submit that the specifically claimed circuitry coupled with the photosensors and configured to *interpolate the output signal of one of the photosensors of one of the two color sub-channels using the output signal of another of the photosensors of another of the two color sub-channels* is not disclosed by the prior art.

Appellants respectfully submit that the generic interpolation teachings of signal generating processing section 94 of Mizukura fail to show the identical invention in as complete detail as recited in claim and the reliance upon such teachings in support of the anticipation rejection of claim 1 is in error.

Appellants respectfully request reconsideration and withdrawal of the 102 rejection of claim 1 for at least the above-mentioned reasons.

Referring to page 3 of the Office Action in the "Response to Arguments" section, the Office apparently relies upon judicial notice in support of the rejection by stating that interpolation is well known in the art. Applicants respectfully traverse any assertion that the specifically claimed interpolation limitations of claim 1 which are absent from Mizukura may be considered to be well known. MPEP 2144.03A (8th ed., rev. 7) provides that *official notice unsupported by documentary evidence should only be taken by the examiner when the facts asserted to be well known or to be common knowledge in the art are capable of instant and unquestionable demonstration as being well known*. It is *not appropriate* for the Office to take official notice of facts without a reference where the facts asserted to be well known are not capable of instant and unquestionable demonstration as being well-known. In addition, claims are analyzed in the context of the combination of the various separately stated limitations of the claimed invention as a whole, and not with respect to the limitations individually.

MPEP 2144.03A (8th ed., rev. 7) provides that *official notice is proper when the facts are capable of instant and unquestionable demonstration as to defy dispute*. MPEP 2144.03A gives examples of limitations which are considered well known, such as when new audio information is recorded then the old information is erased, or when a heat requirement is varied it is well known to vary a flame. The MPEP states that Official Notice is proper when the *teachings are readily verifiable* (e.g., use of a control in bacteriology). MPEP 2144.03B (8th ed., rev. 7). MPEP 2144.03A and 2144.04E (8th ed., rev. 7) make clear that *Official Notice is proper with respect to facts which are of notorious character and serve only to fill in the gaps in an insubstantial manner*.

Appellants respectfully assert that the specifically recited combination of limitations of the claim are not disclosed by the prior art and may not be fairly considered to be well known in consideration of the above-recited authority and the differences between the claimed limitations and the examples of limitations considered to be well known as set forth in the above-recited authority. Appellants respectfully submit that Mizukura is void of interpolating the G1 output using the G2 output (or vice versa) and the specifically claimed interpolation of claim 1 reciting circuitry coupled with the photosensors and configured to *interpolate the output signal of one of the photosensors of one of the two color sub-channels using*

the output signal of another of the photosensors of another of the two color sub-channels may not be fairly considered to be well known in consideration of the above-recited authority and the absence of any teachings of the claimed circuitry in the prior art. Furthermore, the existence of alternative types of interpolation and/or interpolation of red, green and blue data per paragraph 0087 of U.S. Mizukura apart from the claimed interpolation illustrates that the specifically claimed interpolation of the circuitry configured to *interpolate the output signal of one of the photosensors of one of the two color sub-channels using the output signal of another of the photosensors of another of the two color sub-channels* may not be considered to be well known.

Appellants respectfully submit that the circuitry defined in claim 1 is not well known for the above-mentioned reasons. Appellants also respectfully submit that the deficiencies of the prior art teachings with respect to the claimed limitations and the improper reliance upon judicial notice in support of the rejection of claim 1 illustrates the improper nature of the rejection.

Referring to the "Response to Arguments" section at first paragraph of page 4 of the Office Action, the Office describes a generic interpolation process where green and blue values from adjacent green and blue pixels may be interpolated to provide green and blue information for a red sensor. However, such demosaicing interpolation of the primaries fails to teach or suggest *interpolating one of the two color **sub-channels** u sing the output signal of another of the photosensors of another of the two color **sub-channels*** as specifically recited in the claims. The art is void of any teachings of interpolating one sub-channel using another sub-channel as claimed.

The Office continues in the first paragraph of page 4 to state that the values of one of the two sub-channels is used to calculate the value of one of the two sub-channels for the photosensor R. *Appellants note that the Office has failed to identify any prior art teachings in support of this statement*. This statement *with no support in the prior art* illustrates the deficiencies of the prior art teachings and the improper nature of the 102 rejection.

Furthermore, calculation of *one* of the two sub-channels (e.g., G1) using values of the *one* of the two sub-channels (i.e., the same one of the two sub-channels – G1) as alleged by the Office fails to teach the claimed limitations of

*interpolating **one** of the two color sub-channels using the output signal of another of the photosensors of **another** of the two color sub-channels.*

Appellants respectfully submit that positively-recited limitations of the claims are not disclosed by the prior art for the above-mentioned reasons.

Appellants respectfully submit the prior art rejection is in error since limitations of the claims are not disclosed nor suggested by the prior art. Appellants respectfully request reversal of the 102 rejection of claims 1-3, 25, 27 and 28 for at least the above-mentioned compelling reasons.

Appellants also note that claims 4-11 and 26 also depend from claim 1. Appellants also respectfully submit the rejections of these claims are improper for the above-mentioned reasons and respectfully request reversal of the prior art rejections of claims 4-11 and 26.

B. Positively-recited limitations of claims 12-16, 29 and 31 are not disclosed by Mizukura and the 102(a) rejection is in error.

Independent claim 12 recites *combining the output of one of the photosensors of one of the at least two color sub-channels with the output of another of the photosensors of another of the at least two color sub-channels.*

At pages 7-8 of the Office Action, the Office relies upon the teachings of paragraphs 99-101 of JP Mizukura as allegedly teaching the above-recited combining limitations. These teachings correspond to paragraphs 0129-0131 of US Mizukura which, similar to paragraphs 99-101 of JP Mizukura, refer to Fig. 18. Per paragraph 0055 of US Mizukura, Fig. 18 shows an example of the *spectral sensitivity characteristics* of the four-color color filter. The teachings of the spectral sensitivity characteristics merely depict the wavelengths of light which are sensed after the filtering by the R,B,G1 and G2 filters and *fail to provide any disclosure regarding combining the outputs of the sensors* let alone teaching or suggesting the specifically-claimed limitations of *combining the output of one of the photosensors of **one** of the at least two color **sub-channels** with the output of another of the photosensors of **another** of the at least two color **sub-channels.***

Appellants respectfully submit that the teachings of Fig. 18 and paragraphs 99-101 of JP Mizukura fail to teach the above-recited limitations. Appellants

respectfully request reconsideration and withdrawal of the prior art rejection for at least this reason.

At pages 7-8 of the Action as well as page 4 in the "Response to Arguments" section, the Office generically refers to a "linear matrix treating part 95" in support of the rejection without identifying any specification teachings in the JP or US Mizukura references in support of the rejection. The generic linear matrix treating part 95 fails to teach the limitations of *combining the output of one of the photosensors of one of the at least two color sub-channels with the output of another of the photosensors of another of the at least two color sub-channels*. Appellants respectfully submit the rejection is in error for this reason.

The Examiner also states at page 4 and repeated at pages 7-8 that he considers the generic teachings of the linear matrix treating part 95 to teach that G1 and G2 are combined to form the G for the RGB code for three colors. However, the Examiner has cited no authority or teachings in support of his interpretation of the teachings of Mizukura or that Mizukura actually teaches that G1 and G2 are combined to form G for the RGB code for three colors as baldly alleged on page 8 of the Office Action.

Appellants respectfully submit that Mizukura fails to teach or suggest the positively-claimed limitations of *combining the output of one of the photosensors of one of the at least two color sub-channels with the output of another of the photosensors of another of the at least two color sub-channels*. The failure of the Office to identify any teachings in the prior art of the claimed limitations illustrates the erroneous nature of the rejection.

Appellants respectfully submit the prior art rejection is in error since limitations of the claims are not disclosed nor suggested by the prior art. Appellants respectfully request reversal of the 102 rejection of claims 12-16, 29 and 31 for at least the above-mentioned compelling reasons.

Appellants also note that claims 17-24, 30 and 32 also depend from claim 12. Appellants also respectfully submit the rejections of these claims are improper for the above-mentioned reasons and respectfully request reversal of the prior art rejections of claims 17-24, 30 and 32.

C. Positively-recited limitations of claim 25 are not disclosed by Mizukura and the 102(a) rejection is in error.

Claim 25 recites that the *circuitry is configured to interpolate the output signal of the one of the photosensors using **only** the output signal of the another of the photosensors* in combination with the limitations of claim 1 from which claim 25 depends reciting that the output signal of one of the photosensors which is interpolated is *one of the two color sub-channels* and the interpolation uses the output signal of another of the photosensors which is *another of the two color sub-channels*.

Appellants respectfully submit these limitations are not disclosed nor suggested by the prior art and the 102 rejection is in error.

Claim 25 depends from claim 1. The Office relies upon the teachings of the signal generation processing section 94 of paragraph 0087 as disclosing the interpolation limitations recited in claim 1. Paragraph 0087 provides that the signal generation processing section 94 performs an interpolation process for interpolating color signals of 2x2 pixels of the minimum unit of RG1G2B. Per Fig. 9, the minimum unit includes color information from a R sensor, a G1 sensor, a G2 sensor and a B sensor. The explicit teachings in paragraph 0087 of interpolating the R, G1, G2 and B color signals discloses the opposite of the claimed circuitry *configured to interpolate the output signal of the one of the photosensors using **only** the output signal of the another of the photosensors* in combination with the limitations of claim 1 reciting that the output signal of one of the photosensors which is interpolated is *one of the two color sub-channels* and the interpolation uses the output signal of another of the photosensors which is *another of the two color sub-channels*.

Mizukura is void of any teachings that G1 is interpolated only using G2 or that G2 is interpolated only using G1. Appellants respectfully submit Mizukura fails to teach the claimed *circuitry configured to interpolate the output signal of the one of the photosensors [of one of the two color sub-channels per claim 1] using **only** the output signal of the another of the photosensors [of another of the two color sub-channels per claim 1]* and the rejection is improper.

The Office at page 8 of the Office Action relies upon the teachings of paragraphs 0059 and 0065 of JP Mizukura (corresponding to paragraphs 0081 and

0087 of US Mizukura) as allegedly teaching the limitations of claim 25. However, paragraph 0081 of US Mizukura merely states that signal processing section 71 performs an interpolation process without disclosing that G1 is interpolated only using G2 or that G2 is interpolated only using G1. Furthermore, paragraph 0087 generically discloses interpolating R, G1, G2 and B color signals which also fails to teach that G1 is interpolated only using G2 or that G2 is interpolated only using G1.

Appellants respectfully submit the prior art rejection is in error since limitations of the claim are not disclosed nor suggested by the prior art. Appellants respectfully request reversal of the 102 rejection for at least the above-mentioned compelling reasons.

D. Positively-recited limitations of claim 31 are not disclosed by Mizukura and the 102(a) rejection is in error.

Dependent claim 31 recites that the combining the one and another outputs of the one and another photosensors of claim 12 produces a combined signal, and wherein *the one and another outputs of the one and another photosensors are the only outputs combined to produce the combined signal* in combination with the limitations of claim 12 from which claim 31 depends reciting that the *combining comprises combining the output of one of the photosensors of one of the at least two color sub-channels with the output of another of the photosensors of another of the at least two color sub-channels*.

Appellants respectfully submit these limitations are not disclosed nor suggested by the prior art and the 102 rejection is in error.

The Office relies upon the teachings of paragraphs 66-67 and 75-76 of JP Mizukura (paragraphs 87-88 and 97-97 of US Mizukura) as teaching the limitations of claim 31. Paragraph 0087 provides that the signal generation processing section 94 performs an interpolation process for interpolating color signals of 2x2 pixels of the minimum unit which includes color information from a R sensor, a G1 sensor, a G2 sensor and a B sensor. The explicit teachings in paragraph 0087 of interpolating the R, G1, G2 and B color signals discloses the opposite of the claimed limitations that *the one and another outputs of the one and another photosensors (corresponding to the one and another of the at least two color sub-channels per claim 12) are the only outputs combined to produce the combined signal*.

Mizukura is void of any teachings that G1 is combined only with G2 (or vice versa) to form a combined signal and Appellants respectfully submit Mizukura fails to teach the above-recited claimed limitations for at least this reason.

The Office also relies upon the teachings of paragraphs 0075-0076 of JP Mizukura (corresponding to paragraphs 0097 and 0098 of US Mizukura) as allegedly teaching the limitations of claim 32. However, paragraph 0097 of US Mizukura discusses conversion of the plural color signals R, G1, G2 and B producing three color RGB signals but fails to teach how G is formed. In particular, paragraph 0097 fails to teach that G1 and G2 are combined. Paragraph 0098 discloses combination of the R, G, B signals together to generate a luminance signal and color-difference signal which fails to teach the above-recited limitations.

Appellants respectfully submit the prior art rejection is in error since limitations of the claim are not disclosed nor suggested by the prior art. Appellants respectfully request reversal of the 102 rejection for at least the above-mentioned compelling reasons.

E. Positively-recited limitations of claim 26 are not disclosed nor suggested by Mizukura and Kakarala and the 103(a) rejection is in error.

Dependent claim 26 recites that the *circuitry is configured to interpolate the output signal prior to any color correction processing of the output signals* in combination with claim 1 which recites that the *circuitry is configured to interpolate the output signal of one of the photosensors of one of the two color sub-channels using the output signal of another of the photosensors of another of the two color sub-channels*.

Accordingly, claim 26 recites that the *circuitry interpolates the output signal of one of the two color sub-channels using another of the two color sub-channels prior to any color correction processing of the output signals.*

Appellants respectfully submit that the teachings of Mizukura teach away from the claimed limitations and the combination of references proposed by the Office and the 103 rejection is in error.

Referring to page 15, line 5 of the originally-filed specification, color correction refers to demosaicing where red, green, and blue intensities are generated for pixels of the array. Referring to the rejection of claim 25 set forth on

page 8 of the Office Action, the Office states that paragraph 0087 of US Mizukura teaches an interpolation process which generates RGB data for all photosensors (i.e., demosaicing interpolation process). Referring again to page 6 of the Office Action, the Office relies upon the same teachings of paragraph 0087 of US Mizukura as allegedly disclosing the claimed circuitry configured to interpolate the output signal of the *one of the two color sub-channels* using the output signal of *another of the two color sub-channels*. Accordingly, the teachings of signal generation processing section 94 of Mizukura which are relied upon as allegedly teaching the claimed interpolation of claim 1 teaches color correction as used in the present application (i.e., demosaicing) as noted by the Office at page 8.

Appellants respectfully submit that Mizukura teaches away from the modification proposed by the Office in support of the 103 rejection of claim 26 since the Office's interpretation of the Mizukura teachings discloses that *the same circuitry (i.e., the signal generation processing section 94) discloses both the claimed interpolation of claim 1 and color correction* which teaches away from any modification to Mizukura to arrive at the claimed limitations of the circuitry configured to interpolate the output signal of one of the two color sub-channels using another of the two color sub-channels prior to any color correction processing of the output signals.

Appellants respectfully submit that the teaching away illustrates the improper nature of the 103 rejection. More specifically, Appellants refer to MPEP 2141.02VI (8th ed., rev. 7) entitled PRIOR ART MUST BE CONSIDERED IN ITS ENTIRETY, INCLUDING DISCLOSURES THAT TEACH AWAY FROM THE CLAIMS. This MPEP section further states that a prior art reference must be considered in its entirety, i.e., *as a whole*, including portions that would lead away from the claimed invention. *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 220 USPQ 303 (Fed. Cir. 1983). Such teaching away is the antithesis of the art's suggesting that the person of ordinary skill go in the claimed direction. Essentially, teaching away from the art is a *per se* demonstration of lack of obviousness. *In re Dow Chemical Co.*, 837 F.2d 469, 5 USPQ2d 1529 (Fed. Cir. 1988).

Appellants respectfully request reconsideration and withdrawal of the 103 rejection in consideration of the explicit teaching away in Mizukura from the modification proposed by the Office.

F. Positively-recited limitations of claim 32 are not disclosed nor suggested by Mizukura and Kakarala and the 103(a) rejection is in error.

Independent claim 12 recites *combining the output of one of the photosensors of one of the at least two color sub-channels with the output of another of the photosensors of another of the at least two color sub-channels* and dependent claim 32 recites that the combining comprises *combining prior to any color correction processing of the outputs*.

Appellants respectfully submit that the teachings of Mizukura teach away from the claimed limitations and the combination of references proposed by the Office and the 103 rejection is in error.

Referring to page 15 of the originally-filed specification, color correction refers to demosaicing where red, green, and blue intensities are generated for pixels of the array. The Office has interpreted at page 8 of the Office Action that the signal generation processing section 94 of paragraph 0087 of US Mizukura teaches a demosaicing interpolation process which generates RGB data for all photosensors and corresponding to color correction as used in Appellants' specification. Referring again to page 7 of the Office Action, the Office relies upon the teachings of the linear matrix treating part 95 as allegedly teaching the claimed combining. Referring to Fig. 13, it is clear that the *operations of the linear matrix treating part 95 occur after the demosaicing or color correction of signal generation processing section 94* which teaches away from the modification to Mizukura proposed by the Office per the teachings of Kakarala to arrive at the above-recited limitations. In particular, the disclosed *demosaicing or color correction of signal generation processing section 94 of Mizukura occurs before the alleged combining of the signals in linear matrix processing section 95* which teaches away from the modification to arrive at claim 32 which specifies that the *combining of the output of the one and the another of the two color sub-channels occurs prior to color correction processing*. Appellants respectfully submit the teaching away is the antithesis of the art's suggesting that the person of ordinary skill go in the claimed direction. Essentially, teaching away from the art is a *per se* demonstration of lack of obviousness. *In re Dow Chemical Co.*, 837 F.2d 469, 5 USPQ2d 1529 (Fed. Cir. 1988).

Appellants respectfully request reconsideration and withdrawal of the 103 rejection in consideration of the explicit teaching away in Mizukura from the modification proposed by the Office.

G. Conclusion

In view of the foregoing, reversal of the rejections of the claims is respectfully requested. For any one of the above-stated reasons, the rejections of the respective claims should be reversed. In combination, the above-stated reasons overwhelmingly support such reversal. Accordingly, Appellants respectfully request that the Board reverse the rejections of the claims.

Respectfully submitted,

Date: 5/26/09

Attorney: _____

James D. Shaurette
Reg. No. 39,833

VIII. CLAIMS APPENDIX

1. (Previously Presented) An image sensing device comprising:

a plurality of photosensors arranged in at least one array, such that each of the photosensors converts incident light into an output signal, the photosensors and their respective output signals being divided into a plurality of color channels;

a filter associated with each of the photosensors, the filters selecting light within predetermined spectral bands for conversion by the photosensors into the output signals, one color channel indicative of one color and having an associated spectral bandwidth comprising at least two color sub-channels and the filters associated with the photosensors of the at least two color sub-channels having spectral bands within the spectral bandwidth of the one color channel wherein one of the spectral bands is narrower in bandwidth than another of the spectral bands; and

circuitry coupled with the photosensors and configured to interpolate the output signal of one of the photosensors of one of the two color sub-channels using the output signal of another of the photosensors of another of the two color sub-channels.

2. (Original) The image sensing device of claim 1 wherein the photosensors are arranged in a single array and the filters associated with each photosensor are arranged in a mosaic of filters located over the photosensor array.

3. (Original) The image sensing device of claim 2 wherein the mosaic of filters is arranged in a Bayer pattern.

4. (Original) The image-sensing device of claim 1 wherein a beam splitter is provided which splits incident light into a plurality of paths and a separate filter/photosensor array combination is located in each path, there being a separate path and respective filter/photosensor array combination provided for each color channel or sub-channel.

5. (Original) The image-sensing device of claim 1 wherein a beam splitter is provided which splits incident light into a plurality of paths and a separate filter/photosensor array combination is located in each path, there being a separate path and respective filter/photsensor array combination provided for each color channel, and whereby the at least one of the color channels that is further divided into a plurality of sub-channels is represented by a single filter/photosensor array combination wherein a filter associated with each photosensor of the plurality of sub-channels is arranged in a mosaic of filters located over the photosensor array.

6. (Original) The image sensing device of claim 1 wherein the color channels comprise red, green and blue color channels and the green color channel is divided into a plurality of sub-channels, a first one of which uses a first green filter type and a second of which uses a second green filter type having a spectral band which is narrower in bandwidth than and overlapping with the spectral band of first green filter type.

7. (Original) The image sensing device of claim 6 wherein the first green sub-channel uses a Kodak.TM. Wratten.TM. #58 (green tricolor) filter.

8. (Original) The image sensing device of claim 7 wherein the second green sub-channel uses a Kodak.TM. Wratten.TM. #99 (green) filter.

9. (Original) The image sensing device of claim 6 wherein the red channel is divided into a plurality of sub-channels, a first one of which uses a first red filter type and a second of which uses a second red filter type having a spectral band which is narrower in bandwidth than and overlapping with the spectral band of the first red filter type.

10. (Original) The image sensing device of claim 6 wherein the blue channel is divided into a plurality of sub-channels, a first one of which uses a first blue filter type and a second of which uses a second blue filter type having

a spectral band which is narrower in bandwidth than and overlapping with the spectral band of the first blue filter type.

11. (Original) The image sensing device of claim 1 wherein the color channels comprise cyan, yellow, magenta and green color channels and the green channel is divided into a plurality of sub-channels, a first one of which uses a first green filter type and a second of which uses a second green filter type having a spectral band which is narrower in bandwidth than and overlapping with the spectral band of first green filter type.

12. (Previously Presented) A method of capturing an electronic representation of an image comprising the steps of:

a) projecting the image onto a sensor device comprising a plurality of photosensors, divided into a plurality of color channels;

b) restricting the wavelengths of light incident on each photosensor to a spectral band defining a color associated with the color channel of the respective photosensor;

c) combining the outputs of the photosensors to generate the electronic representation of the image, wherein one color channel indicative of one color and having an associated spectral bandwidth is divided into at least two color sub-channels having filters associated with the photosensors of these at least two color sub-channels, the filters having spectral bands within the spectral bandwidth of the one color channel wherein one of the spectral bands is narrower in bandwidth than another of the spectral bands within the spectral bandwidth of the one color channel, and the combining comprises combining the output of one of the photosensors of one of the at least two color sub-channels with the output of another of the photosensors of another of the at least two color sub-channels.

13. (Original) The method of claim 12 wherein individual photosensors of the different color channels are intermixed in a single photosensor array, and the step of restricting the wavelengths of light incident on each photosensor comprises positioning an associated filter over the respective photosensor,

whereby light falling on the photosensor passes through the associated filter, the filters being arranged as a mosaic of filter elements with a filter element located over each photosensor in the array.

14. (Original) The method of claim 13 wherein the mosaic of filter elements is arranged in a Bayer pattern.

15. (Original) The method of claim 14 wherein the mosaic of filter elements comprises red, green and blue elements associated with red green and blue color channels and the green color channel comprises two green sub-channels.

16. (Original) The method of claim 15 wherein the Bayer pattern comprises alternating rows of filters a first of which includes red filters and green filters of the first green sub-channel and the second of which includes blue filters and green filters of the second green sub-channel.

17. (Original) The method of claim 12 wherein a separate photosensor array is associated with each color channel or sub-channel and the image is projected onto the photosensor arrays via a beam splitter which splits incident light into a plurality of paths corresponding to the number of photosensor arrays and each photosensor array having an associated filter which limits the wavelengths of light falling on the respective photosensor array to those of the spectral band of respective color channel or sub-channel.

18. (Original) The method of claim 12 wherein a separate photosensor array is associated with each color channel and the image is projected onto the photosensor arrays via a beam splitter which splits incident light into a plurality of paths corresponding to the number of photosensor arrays, each photosensor array having an associated filter or filters which limits the wavelengths of light falling on the respective photosensor array to those of the respective color channel, and wherein at least one of the color channels is further divided into a plurality of sub-channels represented by a single filter/photosensor array

combination and a filter associated with each photosensor of the plurality of sub-channels is arranged in a mosaic of filters located over the photosensor array.

19. (Original) The method of claim 12 wherein the colors associated with the respective color channels comprise red, green and blue and the green color channel is divided into a plurality of sub-channels, a first one of which uses a green filter type having a first green spectral band and a second of which uses a green filter type having a second green spectral band which is narrower in bandwidth than and overlapping with the first green spectral band.

20. (Original) The method of claim 19, wherein the first green sub-channel uses a Kodak.TM. Wratten.TM. #58 (green tricolor) filter.

21. (Original) The method of claim 20 wherein the second sub-channel uses a Kodak.TM. Wratten.TM. #99 (green) filter.

22. (Original) The method of claim 19 wherein the red color channel is divided into a plurality of sub-channels, a first one of which uses a red filter type having a first red spectral band and a second of which uses a red filter type having a second red spectral band which is narrower in bandwidth than and overlapping with the first red spectral band.

23. (Original) The method of claim 19 wherein the blue color channel is divided into a plurality of sub-channels, a first one of which uses a blue filter type having a first blue spectral band and a second of which uses a blue filter type having a second blue spectral band which is narrower in bandwidth than and overlapping with the first blue spectral band.

24. (Original) The method of claim 12 wherein the colors associated with the respective color channels comprise cyan, yellow, magenta and green and the green color channel is divided into a plurality of sub-channels, a first one of which uses a green filter type having a first green spectral band and a second

of which uses a green filter type having a second green spectral band which is narrower in bandwidth than and overlapping with the first green spectral band.

25. (Previously Presented) The image sensing device of claim 1 wherein the circuitry is configured to interpolate the output signal of the one of the photosensors using only the output signal of the another of the photosensors.

26. (Previously Presented) The image sensing device of claim 1 wherein the circuitry is configured to interpolate the output signal prior to any color correction processing of the output signals.

27. (Previously Presented) The image sensing device of claim 1 wherein the filters are configured to cause saturation of respective ones of the one and another photosensors responsive to reception of different amounts of the incident light of the one color by the respective ones of the one and another photosensors.

28. (Previously Presented) The image sensing device of claim 27 wherein the filters are configured to cause registration of the incident light of the one color above a noise floor by respective ones of the one and another photosensors responsive to reception of different amounts of the incident light of the one color by the respective ones of the one and another photosensors.

29. (Previously Presented) The method of claim 12 further comprising interpolating the output of the one of the photosensors using only the output of the another of the photosensors.

30. (Previously Presented) The method of claim 12 wherein the combining provides the combined signal corresponding to one of five different output areas responsive to reception of the light of the one color by the one and another photosensors including: a first area wherein the outputs of the one and another photosensors are unregistrable below a noise floor; a second area

wherein only one of the outputs of the one and another photosensors is unregistrable below the noise floor; a third area wherein both of the outputs of the one and another photosensors are above the noise floor and below a saturation level; a fourth area wherein only one of the outputs of the one and another photosensors is below a saturation level; and a fifth area wherein both of the outputs of the one and another photosensors are below the saturation level.

31. (Previously Presented) The method of claim 12 wherein the combining the one and another outputs of the one and another photosensors produces a combined signal, and wherein the one and another outputs of the one and another photosensors are the only outputs combined to produce the combined signal.

32. (Previously Presented) The method of claim 31 wherein the combining comprises combining prior to any color correction processing of the outputs.

IX. EVIDENCE APPENDIX

Appellants submit no evidence with this appellate brief.

X. RELATED PROCEEDINGS APENDIX

Appellants are not aware of any related proceedings.